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Date.	Satellite.	Phenomenon.	Observed G.M.T.	G.M.T. from N.A. — Obs.	Observers.	Remark.
1873.			h m s	m s		
Apr. 18		bisection	2 27 34·7	+4 25·3		
		int. contact	29 57·2			
19	I.	Oc. D. ext. contact	11 37 46·0 P.M.		S. P.	Mist.
		bisection	39 45·5	+0 14·5		
20		Tr. I. ext. contact	8 59 26·5		,,	
		bisection	9 2 3·0	−2 3·0		
		int. contact	4 13·0			
		Sh. I. bisection	10 13 22·6	−1 22·6	,,	
		int. contact	14 45·6			
		Tr. E. int. contact	11 17 14·1		,,	Passing mist.
		bisection	19 28·1	+0 31·9		
		ext. contact	21 19·1			
	IV.	Oc. R. bisection	11 40 28·1	−0 28·1	,,	
		ext. contact	43 57·6			
21	I.	Ec. R.	9 37 3·7	+0 1·2	,,	Full brightness 2^n or 3^m later.
23	III.	Tr. E. int. contact	0 1 30·0 A.M.		W. C.	Tremulous.
		bisection	6 16·5	+2 43·5		
		ext. contact	10 43·5			
	II.	Oc. D. ext. contact	9 40 29·3 P.M.		S. P.	
		bisection	43 28·3	+0 28·3		
29	I.	Sh. E. bisection	8 54 9·5	+0 50·5	W. C.	Faint, unsteady.

Stonyhurst Observatory,
May 2, 1873.

Observations of Procyon as a Double Star.
By O. Struve.* (Abstract.)

(*Communicated by the Astronomer Royal.*)

For the last twenty-two years the author has made one or two comparisons every year of this star with two telescopic stars, about six minutes of R.A. on each side of it, with the view of obtaining material for a confirmation of Bessel's theory of its irregular proper motion. On the 19th of March last whilst thus observing it, under exceptionally favourable atmospheric

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* Communicated to the Academy of Sciences of St. Petersburg, 1873, April 8. Abstracted by W. T. Lynn, B.A.

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conditions, he detected a faint point of light which followed *Procyon* at a very small distance, nearly on the same parallel. After ascertaining that this object was visible in the same manner in all parts of the field, and with eye-pieces of different power, he compared it micrometrically with the principal star. Three determinations of the position-angle, three measures of distance, and finally three more determinations of position-angle gave, with excellent agreement, distance = 11″·68, position-angle = 86°·8. The brightness of the small point of light (henceforth to be considered a companion of *Procyon*) was estimated at about two classes of magnitude less than the companion of *Sirius* discovered by Alvan Clark, of which the author had succeeded in obtaining a good measure only a few minutes before, *Sirius* being scarcely 13° above the horizon; a sufficient proof that the *Procyon* companion was not a false image produced by impurity of the object-glass or other defect. As a still more complete test of this, the author attempted to make another observation in the second position of the instrument, but unfortunately whilst reversing it, the sky became covered with a thick stratum of cloud, and nothing more could be done that evening.

Having so frequently observed *Procyon* on previous occasions, with the special object of searching for a satellite, without any result, the conjecture at once presented itself that the object in question was a satellite, whose orbital motion had only recently brought it so far out of the rays of the bright star as to be perceptible. It could not possibly be a small star only optically connected with *Procyon*, because if so it would have been 24″ from *Procyon*, and therefore much more easily visible in 1851, when these measures were commenced, and the neighbourhood of *Procyon* carefully examined.

A reference next morning to Auwers' paper of 1862* appeared to support the probability that the object now discovered is identical with the hypothetical body supposed in that paper to be disturbing the motion of *Procyon*.

Even on the night of the discovery, any idea that the point of light was the effect of any ocular illusion, was disproved by the fact that it was also seen by the author's assistant, Herr Lindemann; and any doubt that it might be due to any peculiar atmospheric reflection was dispelled by subsequent observation. The whole of these are contained in the following table, in which the position-angles are each the mean of three determinations, and the number of measures of distance are given in parentheses after each measure. The power III. (magnification, 309 times) was used throughout, excepting on March 29th for the second position, when the next higher power (412 times) was employed.

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* An abstract of this paper will be found in *Monthly Notices*, vol. xxiii. pp. 18–20.

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Date.	Sidereal Time.	Distance.	Sidereal Time.	Position Angle.	Remarks.
1873.	h m	″	h m	°	
Mar 19	7 50	11·68 (3)	7 42	86·8	Images excellent. All measures in first position.
				86·9	
23			9 13	88·3	First position.
			9 41	87·6	Second position. Images not satisfactory. Companion only momentarily seen. Measures of distance impossible.
26	Images generally tolerable, but companion not seen with certainty.				
28			8 45	85·3	Observed in Position II. Light mist and companion only momentarily visible.
	9 0	12·09 (1)	9 8	89·0	After return to Position I. images better. Distance-measures very difficult. Herr Lindemann also saw companion in both positions.
	9 20	12·28 (1)	9 31	88·6	
29	8 5	12·37 (3)	7 55	85·8	Position I. Images beautiful. Companion seen easily; also by Herr Wagner.
			8 28	85·9	
	8 55	12·71 (1)	8 48	90·1	No more possible, images becoming tremulous.
30			8 14	87·8	Position II. Too tremulous afterwards to see companion.
31	8 25	14·07 (1)?	8 7	90·2	Position II. In dark field the companion always visible, but not sufficiently steady for satisfactory observation. The first measures of distance bad.
	8 30	12·76 (1)	8 45	89·0	
	8 55	13·04 (1)			
April 2			8 14	88·4	Position I. Images good.
	8 45	14·62 (1)	8 35	90·5	Position II. In first set, images tremulous from light mist. Afterwards sky clear, but eye fatigued. Companion visible the whole evening, but measures very difficult.
	9 6	11·97 (2)	9 22	85·8	

In conclusion, the author hopes to see his observations of this small companion-star of *Procyon* confirmed by other observers with other instruments. On the night of the discovery (March 19th) he wrote to Mr. Newall at Gateshead, requesting him to look for it with Cooke's 25-inch object-glass. Unfortunately, however, that gentleman was absent at the time, and before his return it is is to be feared that daylight will stand in the way of observations

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in that part of the sky. We must probably therefore wait for next winter for a complete confirmation of the discovery of this interesting object. As the period determined by Auwers for *Procyon* in the paper above referred to, amounts to forty years, it is not likely that when observations can be resumed, the companion will be again so near the principal star as to be lost in its rays.

New Nebulæ discovered at the Observatory of Marseilles.

By M. E Stéphan.

M. Stéphan announces his having detected about 300 new nebulæ, but that the positions of 75 only have been accurately determined by comparision with catalogued stars. The following list of fifteen is in continuation of previous ones. The positions of the remainder will follow as they are ascertained.

Positions moyennes pour 1872·0.

Star de Comp.	R.A.			P.			
	h	m	s	°	′	″	
a	17	8	43·47	49	35	12·7	e. e. F.—13 precède de $0^{s}{\cdot}4$ (à peine observable.
b	19	13	1·20	44	13	29·5	e. e. F.—(à peine observable.)
c	20	29	39·26	95	3	43·6	e. e. F.—m. E.—Vap.—i. R.—Leg. cond. au C.
d	21	15	39·42	51	22	12·1	e. P.—e. F.—R.—ext. petite, se projette sur la néb. près du centre.
e	21	35	8·32	94	17	28·6	e. e. P.—e. e. F.—R.—Cond. au C.
f	21	38	13·63	94	11	26·4	e. P.—e. F.—R.—Cond. au C. mais pas de P. B.
g	21	56	51·38	79	24	33·9	t. P.—t. F.—R.—g. B. M.
h	22	6	1·66	51	54	33·7	e. P.—e. F.—R.—Leg. Cond. au C.
h	22	6	18·68	51	55	57·3	e. P.—e. F.—R.—Leg. Cond. au C. (un peu moins faible que la précédente.)
i	22	9	58·40	71	24	17·1	t. F.—I.—E du S au N (1′ sur 0′·3) —✱ 10 en contact au S.
k	22	10	15·95	74	9	57·9	e. e. P.—e. e. F.—R.—Cond. au C.
l	22	22	32·07	60	21	41·8	P.—e. e. F.—Ov.—Leg. Cond. au C. —p. ✱ projetée près du bord.
m	22	29	41·06	55	51	16·1	e. e. P.—e. F.—R.—Cond. au C.
n	22	32	24·05	55	9	55·7	e. P.—e. F. (à peine observable)—Vap.—Leg. Cond. au C.
n	22	32	55·30	55	7	27·2	e. e. P.—e. e. F.—I.—all.—Cond. excentrique.